END.

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CENTRAL INTELLIGENCE AGENCY

OFFICIAL ROUTING SLIP

TO	NAME AND ADDRESS	DATE	INITIALS
1			
2			
3			
4			
5			
6			

25X1

	ACTION		DIRECT REPLY		PREPARE REPLY
	APPROVAL		DISPATCH		RECOMMENDATION
	COMMENT		FILE		RETURN
	CONCURRENCE		INFORMATION		SIGNATURE

Remarks:

Attached are copies of procedures for calibrating and making measurements with the [redacted] M-5 micro- 25X1

scope. I developed them with [redacted] some 25X1

months ago and misplaced them. When I found them

25X1 [redacted] reviewed them and here are the results.

Can you use them in your Unit, 10 February 1964?

[redacted] 25X1

FOLD HERE TO RETURN TO SENDER

FROM: NAME, ADDRESS AND PHONE NO.	DATE
Training Branch [redacted]	4 Feb 64

25X1

NGA Review Complete

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FORM NO. 2-61 237 Use previous editions (40)

U.S. GOVERNMENT PRINTING OFFICE : 1961 O—587282

25X1 [redacted] 25X1
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25X1 To Calibrate [redacted] Microscope for Making PI Measurements - [redacted] Method) 25X1

1. Set magnification ring at proper magnification for desired measurements.

   CAUTION: Remember that with 20x eyepiece, a 25x setting of the magnification ring produces a 50x magnification; 12x produces 24x, etc.

2. Focus optical scale with the black knurled ring on the eyepiece used for making the measurements.

3. Move cross hair to "6" position with eyepiece micrometer so that the cross hair lines up perfectly with the line at number 6. Adjust several times, reading the eyepiece micrometer each time, to see if you are setting the line accurately.

   CAUTION: If the setting of your eyepiece micrometer does not come out to be zero, you must either get a qualified technician to adjust it correctly or compensate for the error as follows:'

   If the micrometer setting, when exactly lined up with the line at number 6, errs in the direction of 90, 80, 70 etc, add the number of units of error to your measurements; if the error is in the direction of 10, 20, 30, etc., subtract it from the measurements you make.

4. Place a millimeter scale (0.1 mm) on the stage of the microscope.

5. Focus the microscope on the millimeter scale.

6. Line up the mm scale with the optical scale. This can be done roughly by moving the mm scale on the stage manually, then more accurately by means of the X and Y motion arms at the base of the microscope and also by rotating the eyepiece scale after loosening the screw which locks it in place.

[redacted] 25X1

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NOTE: Lines on optical scale are much finer than on mm scale. You should align the zero line on the optical scale with the center of one of the major divisions on the mm scale (3, 4, etc.)

7. Rotate eyepiece micrometer until the crosshair lines up with the center of the next major division on the mm scale (a distance of 1 mm).

8. Determine the number of optical scale units in one millimeter by counting the number of whole units visible on the optical scale, and then determine the decimal fraction of the last unit by the reading on the eyepiece micrometer.

9. Determine the number of millimeters per optical scale unit (K factor) by dividing 1.0000 by the answer obtained in step 8 above.

10. Check answer obtained in step 9 for gross errors by looking again into your microscope and making a count of the number of mm contained in 10 optical scale units. When you divide this figure by 10, you should get approximately the same figure you got in step 9. At 50x magnification, the K factor is generally found to be about .178 or .179.

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25X1 [redacted] : Approved For Release 2005/02/17 : CIA-RDP78B04770A001200030008-9 [redacted] 25X1

To measure distances on photography with the [redacted] M-5 Microscope - [redacted] Method)

1. Center the object to be measured in the field of vision
2. Rotate eye piece measuring device so that the optical scale lines up with the object to be measured.
3. Line up the left edge of the object to be measured with the division line which is closest to it.
4. Line up the cross hair with the other end of the object.
5. Count the major units included in your measurement, adding to it the portion expressed on the eyepiece micrometer.
6. Convert the units of optical scale to mm by multiplying the measurement obtained in step 5 times the K factor. (K factor equals no. of mm per unit on the optical scale.)

   Caution: Be sure to use the K factor for the magnification used.

   Note: Multiplication can be done on C and D scales of a slide rule.

   Caution: Avoid measurements not on center third of KH film because of obliquity problems
7. On PI side of slide rule set "scale" at approximate scale.

   Note: In steps 7-8, disregard decimal places.
8. Take mm reading from step 6, set cross hairs on this reading on CM scale and read answer in feet of ground distance on the ground-size (feet) scale.
9. Determine decimal place based on common sense.
10. Round figure off to nearest significant figure, based on limiting factors such as scale accuracy, image quality, human error.
11. If additional measurements are to be made in same target area, at same scale, and at same magnification, then you may use the following

[redacted] 25X1

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25X1

short cut: In steps 1-10 above, it was found that a certain number of units on the optical scale (from step 5) were ultimately found to be equal to a certain number of feet on the ground (from step 10). Set the number of optical units obtained from step 5 on the CM scale opposite the ground distance found in step 10. Record the pseudo-scale indicated on slide rule at this position, so that additional measurements can be made directly at this setting, using only CM and ground size scales without need of further computations.

PROBLEMS: a) Measuring when object is away from the center of film — more obliquity, distortion and smaller images.

b) Measuring when object is at a different angle from X and Y directions - interpolation required... accuracy impaired.

25X1

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Aluminum Sleeves -
Multiple thread 24 pitch 6 lead

IAD	120	Req. 4307
PAG	122	3020
DIA	8	9804
DIA	8	
	20	9922
25X1 [redacted]	2	
AF/For. Tech.	4	
HQ	2	
	286	

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25X1

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2331

1

Shipment No. _____

25X1

GENERAL SHIPPING ORDER NCR PAPER (NO CARBON REQUIRED) Date 1-20-67

SHIP TO/MARK FOR:

INSURABLE VALUE

☐ PARTIAL SHIPMENT
☒ FINAL SHIPMENT

P.O. CONTRACT NO.	JOB NO.	SUFFIX	SEC. CLASS.	SHIPMENT VALUE	REQ. DATE OF SHIPMENT
U03/7/19034	2699				

SHIP VIA	F. O. B.	PREPAID/COLLECT
PICK UP		

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	250		6650 W10 1821 SLEEVES (MULTIPLE THREAD 24 PITCH 6 LEAD) F/U/W [ ] HIGH POWER STEREOVIEWER 25X1

1

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MTC-100 9/65

25X1

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2333

Shipment No. 1

25X1

GENERAL SHIPPING ORDER NCR PAPER (NO CARBON REQUIRED)

Date 1-20-67

SHIP TO/MARK FOR:

INSURABLE VALUE

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☒ FINAL SHIPMENT

P.O. CONTRACT NO.	JOB NO.	SUFFIX	SEC. CLASS.	SHIPMENT VALUE	REQ. DATE OF SHIPMENT
U03/7/21492	2699				

SHIP VIA	F. O. B.	PREPAID/COLLECT
PICK UP		

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	20		6650 W10 3609 CLEAR ANODIZED ALUMINUM SLEEVES, MULTIPLE THREAD 24 PITCH 6 LEAD

25X1 Packing Instructions

Remarks

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25X1

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2334

Shipment No. 1

25X1

GENERAL SHIPPING ORDER NCR PAPER (NO CARBON REQUIRED)

Date 1-20-67

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INSURABLE VALUE

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☒ FINAL SHIPMENT

P.O. CONTRACT NO.	JOB NO.	SUFFIX	SEC. CLASS.	SHIPMENT VALUE	REQ. DATE OF SHIPMENT
U03/7/23070	2910				

SHIP VIA	F. O. B.	PREPAID/COLLECT
PICK UP		

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	8		SLEEVES, CLEAR ANODIZED ALUMINUM
2	4		CASE, CARRYING W/HINGED TOP AND FASTENER

25X1 Packing Instructions

Remarks

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25X1

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2336

Shipment No. 1

25X1

GENERAL SHIPPING ORDER NCR PAPER (NO CARBON REQUIRED)

Date 1-20-67

SHIP TO/MARK FOR:

INSURABLE VALUE

☐ PARTIAL SHIPMENT
☒ FINAL SHIPMENT

P.O. CONTRACT NO.	JOB NO.	SUFFIX	SEC. CLASS.	SHIPMENT VALUE	REQ. DATE OF SHIPMENT
U03/7/22139	2699				

SHIP VIA	F. O. B.	PREPAID/COLLECT
PICK UP		

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	6		6650-W10-4078 ALUMINUM SLEEVES (MULTIPLE THREAD 24 PITCH, 6 LEAD)

25X1 Packing Instructions

Remarks

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